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MISCELLANEOUS.—Kroustschoff¹ has obtained little crystals of biotite by heating to a high temperature a mixture composed of basalt glass (fused basalt and acid rocks), biotite fragments, amorphous silica, potassium silico-fluoride and sodium and aluminium fluoride.—By fusing tin stone with sodium carbonate and sulphur at a low temperature, for five or six hours, Genth² finds that little pyrite crystals are formed.—Alabandine is a regularly crystallizing manganese sulphide. It has been produced artificially by Baubigny,³ by heating in a sealed tube to 100° the pink precipitate produced when hydrogen sulphide is passed through an acetic acid solution of manganese.—“Precious Stones in the United States” is the title of a very readable article, by G. F. Kunz,⁴ in the December number of *Harper's New Monthly Magazine*. It is illustrated by a full-page lithographic plate of the most important gems found within the border of the United States.

BOTANY.⁵

SCHRÖETER'S ARRANGEMENT OF THE USTILAGINEÆ. — In Cohn's *Kryptogamen-Flora von Schlesien*, Schröeter divides the order Ustilagineæ into three families, as follows, viz. :—

I. *Ustilaginacei*, containing the genera Ustilago Pers., Sphacelotheca De Bary, Schizonella Schröeter, Tolyposporium Woronin.

II. *Tilletiacei*, with the genera Tilletia Tul., Urocystis Rabenh., Entyloma De Bary, Melanotænium De Bary, Tubercinia Fr., Doassansia Cornu.

III. *Thecaphorei*, with the genera Schroeteria Winter, Thecaphora Fingerh., Sorosporium Rudol. The genera Graphiola Poit., Entorrhiza C. Web., Piapalopsis J. Kuhn, and Tuberculina Sacc. are added in an appendix as doubtful Ustilagineæ.

SCHRÖETER'S ARRANGEMENT OF THE UREDINEÆ.—Schröeter divides the fruit-forms of the Uredineæ (in Cohn's *Kryptogamen-Flora v. Schlesien*) into two classes, viz. : (1) Fore-fruits or first-fruits (*Vorfrüchte*)—including (a) *Spermogonia*, (b) *Æcidia*, (c) *Uredo*—and (2) Last-fruits or after-fruits (*Endfrüchte*), including the teleutospores. The order Uredineæ he divides into five groups, as follows, viz. :—

I. *Puccinieï*, including the genera *Uromyces* Lk., and *Puccinia* Pers.

¹ Min. u. Petrog. Mitth., ix., 1887, p. 55.

² Contributions from the Chemical Laboratory of the University of Pennsylvania, 1887, p. 5.

³ Comptes Rendus, civ., May, 1887, p. 1372.

⁴ December, 1887, p. 97.

⁵ Edited by Prof Chas. E. Bessey, Lincoln, Neb.

II. *Phragmidiei*, including *Trachyspora* Fkl., *Triphragmidium* Lk., and *Phragmidium* Lk.

III. *Endophyllei*, including the single genus *Endophyllum* Lev.

IV. *Gymnosporangiei*, with the genus *Gymnosporangium* Hedw.

V. *Melampsorei*, including *Melampsora* Cast., *Melampsorella* Schröt., *Calyptospora* J. Kuhn, *Coleosporium* Lev., *Chrysomyxa* Unger., and *Cronartium* Fr.

TUMBLE-WEEDS AGAIN.—The latest addition to the lengthening list of tumble-weeds is *Corispermum hyssopifolium* L., which in northern Nebraska assumes the globular form now so well known as characteristic of the tumble-weeds, and late in the season gives itself to the winds. Fine specimens were brought to me in September, 1887, by a correspondent from Long Pine, near the Niobrara River.

In this connection, it may be well to direct attention to the account given by R. M. Christy, in his "Notes on the Botany of Manitoba," which appeared in the October number of the *Journal of Botany*, of the tumbling habit of *Psoralea esculenta*, the "Indian Turnip" of the prairies: "After flowering, instead of withering away, the plant remains standing, and by the time its seeds are ripe it has become—flowers, stalks and all—perfectly dry, brown and rigid. In this condition it is very light. The stem then separates just below the ground, leaving the entire plant free, to be blown about by the wind over the surface of the prairie, dropping its hard, oval seeds as it goes." Mr. Christy weighed a number of plants and found that, while they averaged six and a half inches in height and bore three flower-clusters each, they had an average weight of but a trifle over thirty grains.—*Charles E. Bessey*.

BOTANICAL WORK IN MINNESOTA.—The Report on the Botanical work in Minnesota for the year 1886, which was distributed the 1st of October, 1887, gives one a very good idea of the kind of work which is being done by those constituting the working force of the Geological and Natural History Survey of the State. Professors Arthur and Bailey, with Mr. E. W. D. Holway, made an expedition to Vermilion Lake, where they remained for some time engaged in the critical study of the flora of the region. Other points were visited, and collections were made. The party was composed of experienced collectors, and the results were unusually good. Two of the party were acute students of the fungi and other lower plants, while the third was equally well prepared for special work on Glumaceæ and Amentaceæ, as well as the Phanerogams in general.

The list of specimens collected is a remarkably good one, numbering seven hundred and sixty-two in all. These are distributed as follows:—

Phanerogams	368	Oöphytes	11
Pteridophytes	26	Zygophytes	45
Bryophytes	42	Protophytes	28
Carpophytes	242		

The 227 Dicotyledons are represented by 90 Choripetalæ, 100 Gamopetalæ, and 37 Apetalæ. Of the 135 Monocotyledons, 47 are sedges, and 30 grasses. Of the Carpophytes, there are 77 Hymenomycetes, 39 Uredineæ, 36 Lichens, 57 Pyrenomycetes, and 21 Helvellaceæ. The Zygophytes are mostly Desmids (31 species) and Diatoms (12 species), while 19 of the Protophytes are Slime Moulds.

The specimens upon which the entries are made are all preserved in the Herbarium of the Survey, a precaution well worthy of general imitation.—*Charles E. Bessey.*

BOTANICAL NEWS.—Dr. Farlow describes in the September *Botanical Gazette* an *Æcidium* on Red Cedar, to which he gives the name of *Æcidium bermudianum*.—Coulter and Rose continue their useful studies of the Umbelliferæ in the October and November numbers of the same journal.—Dr. T. F. Allen appears again in the pages of the *Torrey Bulletin* for October with a paper on Characeæ, accompanied by five plates. Two new *Nitellæ* and one *Tolypella* are described.—The November and December numbers of the *Journal of Mycology* are principally filled with Dr. J. W. Eckfeldt and M. W. Calkins' Lichen Flora of Florida, being a catalogue of species, with notes, and also notices of new species.—Part 3 of Professor Greene's *Pittonia* contains an excellent biographical notice of the late Dr. Albert Kellogg, well known for many years as a collector and student of the Pacific coast plants. The editor, in an article on *Echinocystis* § *Megarrhiza*, insists strenuously that the older name of *Mara* should be used instead of *Megarrhiza*.—The Californian *Manzanitas* received the attention of Dr. O. C. Parry in a paper read before the California Academy of Sciences. They belong to the *Uva-Ursi* section of the genus *Arctostaphylos*, and number twelve species in all.—R. P. Bigelow's paper on the Structure of the Frond in *Champia parvula*, read before the American Academy of Arts and Sciences, now issued as a reprint from the "Proceedings," is a careful study of the structure of this member of the Floridæ.—The Development of the Ostrich Fern (*Onoclea struthiopteris*), by D. H. Campbell, being the "Walker Prize Essay" for 1886, has been printed in the Memoirs of the Boston Society of Natural History. It is accompanied by four good plates.—The Bulletin of the Illinois State Laboratory of Natural History, lately issued, contains an important contribution to our knowledge of the Erysiphææ, by Professor Burrill and F. S. Earle. The Illinois species are carefully described, and the synonymy has received close attention. Several

changes have been made in the names of common species.—J. G. Baker continues his synopsis of Tillandsiæ in the November *Journal of Botany*, reaching No. 112, with the article to be continued. In the December number of the same journal Otto Nordstedt points out that a great many of the figures in Cooke's British Dermsids are copied from Ralfs, Archer, Brébisson, De Bary and many other authors, in spite of the statement that "the greater part of the figures have been drawn direct from the specimens themselves." We must suppose that the artist imposed upon the author in this case.—G. Massee publishes in the December *Grevillea* a revision of Polysaccum, admitting eight species, of which two, *P. pisocarpium* and *P. turgidum* are American.

ENTOMOLOGY.¹

THE HOP PLANT-LOUSE, *Phorodon humuli*.—An important contribution to our knowledge of the life of this species was made during the year just closed, by the Entomologist of the U. S. Department of Agriculture. Professor Riley, assisted by Mr. Pergande, Mr. Howard, and others, very carefully traced the transformations of the species throughout one complete cycle, *i.e.*, from the winter eggs of one year to those of the year following.

The most interesting result of these investigations is the confirmation in a striking manner of the previously known fact that this species passes the winter on plum trees.

It is urged by Professor Riley that this is the only mode of hibernation of the species, or at least that it does not winter on the hop. This is a point of the highest practical importance, and one which must be settled before a complete plan of defence from the ravages of this pest can be matured. Unfortunately, the evidence adduced by Miss Ormerod in her report for 1884, and indicating that one form of this species winters on the roots of hops, is too strong to be set aside by anything yet advanced.

The following is a résumé of the transformations of this insect, as determined by Professor Riley, and published in advance of his annual report² :—

"As soon as plum leaves put out in spring, the first generation of lice hatch from the winter eggs on plum. These are wingless agamic females, giving birth to young like themselves without the intervention of males. The third successive generation upon plum, however, is winged, not wingless, and the first fledged individuals

¹ This department is edited by Prof. J. H. Comstock, Cornell University, Ithaca, N. Y., to whom communications, books for notice, etc., should be sent.

² L. O. Howard, *The Cultivator and Country Gentleman*, November 17, 1887.